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WAGE STATISTICS AND THE NEXT CENSUS OF THE UNITED STATES.

It is characteristic of the practical and realistic direction given to the study of political economy in recent years that great attention is paid to statistics. They lend themselves naturally to the illustration of economic principles, or to exemplify the good results of following out correct economic policy. The theory of free trade has never had a more powerful argument than that deduced from the continually increasing prosperity of Great Britain, as shown by the figures of exports and imports and the extent of its commerce and the size of its merchant marine. Every political economy, however theoretical and deductive it may be in principle, must feel gratified to find its theories confirmed by the actual experience of mankind. In fact, in the long run, such confirmation must be present, or the theory will fall into contempt. The argument in favor of free trade has always been a curious intermixture of *a priori* reasoning and *a posteriori* appeals to successful experience. The free traders have always protested against the derogatory insinuation of the protectionists that free trade was all very well in theory, but bad in practice. And, in this appeal to experience, the former have often been so successful that they have driven the latter off from the purely economic ground of direct gain or loss to more theoretical considerations of the effect of free trade on the social position of the community. The weapon which has enabled them to do this has been the statistics of the enormous increase of wealth in free-trade countries since the adoption of the policy of freedom.

But, so long as we remain in the realm of purely dogmatic political economy, the use of statistics can be of very small importance. At the best, they can be only illustrative or confirmatory of the truths already grasped by deductive reasoning. Often they serve rather to interrupt the continuity and harmonious development of the argument than to strengthen it, especially when contradictory statistics are brought forward on the other side. In their nature, they are too empirical and uncertain to form an integral part of a line of reasoning that, in its essence, is still deductive. The two will not successfully blend.

When, however, we get out of the realm of purely dogmatic into that of historical and descriptive political economy, the position of statistics is entirely different. They become then a valuable auxiliary in the work of depicting the evolution of economic institutions, or of describing the present economic condition of the world. In fact, many of the phenomena of economic life are peculiarly adapted to the quantitative measurements of statistics. If we are studying the evolution of the credit system, what can give us a better conception of the importance of credit transaction in modern times compared with former periods, than the figures of note circulation and clearing-house transactions in civilized countries? If we are describing the present economic resources of the United States, how shall we proceed except by giving the statistics of the productiveness of land, forests, and mines, of the producing power of factories and workshops, of the facilities for water and land transportation, and, if possible, of the total wealth of the community? These attempts of descriptive political economy are sometimes of the most elaborate character. The last census of the United States was a gigantic effort to give a complete description of the social condition of this country. It almost realized Von Schlözer's famous dictum: "Geschichte sei fortlaufende Statistik; Statistik, stillstehende Geschichte." Or, to use a different illustration, it was an attempt to solidify for an instant the great stream of social life, and then to take a cross section which should give us a complete picture of that social life in all its relations at a given moment of time. It was to be an anatomical manikin representing the social *corpus.* It is instructive to notice that, of the twenty great quarto volumes of the census (issued or to be issued), no less than fourteen are devoted to economic statistics; and all of them contain statistics of interest to the economic life of the nation.

Further, when we pass from historical and descriptive political economy, and upon the basis of what we have there learned try to construct an inductive science, the importance of the statistical method becomes still greater. The statistics are no longer mere illustrations, but they constitute a portion of the material out of which we formulate those principles or laws which shall serve both as the explanation of economic life and as a guide to social action in economic affairs. To take concrete examples again: the statistics of the issue of paper money and its depreciation may direct us towards the principles of public credit and also towards the best methods of regulating the issue of credit currency, and the statistics of the decline of our merchant marine may suggest the cause of such decline and the necessary changes in our legislation. Statistics do not furnish by any means the only material of inductive political economy, nor perhaps even the major portion. The historical method has hitherto been the favorite. But, with the extension of statistical inquiry and the refinements in statistical method, statistics promise to be of constantly increasing value. At any rate, they are now furnishing material in greater amount and of more trustworthiness than ever before.

If, now, we examine the material which statistics furnish to dogmatic, descriptive, and inductive political economy, we shall find it to be much more abundant and fruitful in the departments of production and exchange than in that of distribution. It is easy to express numerically the results of production and the transactions of exchange. It is even possible to indicate the results of different methods of production. For instance, we can compare the cotton crop of the Southern States under the system of free labor with the crops before the war under the system of slave labor. Or we can show the average quantity of cotton cloth made by an operative in a mill compared with that made under the old system of hand labor. We can show, on the other hand, the greater gross product from land under a system of peasant proprietorship compared with a system of large estates cultivated by tenants at will, who have no special inducement to careful husbandry. In transportation, it is easy to show the enormous advantages of the use of steam in the total tonnage carried and the continued increased cheapness of carriage. It is here, too, that the statistician who delights in graphical illustration, and who seems desirous of reducing language again to the stage of hieroglyphics, finds his most fruitful field. We have in mind those curving lines mounting higher and higher, those squares, triangles, and circles of different areas, those maps with graduated tints, intended to make vivid the continued increase in production, its enormous extent, or the productive power of different parts of the country.

These statistics of production are both easy to get and easy to express, and it is for this reason that they are so numerous and so much used. The statistics of exports and imports are collected through the ordinary agencies of government. The inquiries of the Census Office as to gross production can be easily answered, and very few people have any objection to answering them. The presentation of the statistics is the simplest possible matter. Generally, it is only the gross figures. If any analysis is made, it consists in arithmetical averages,— as the production per capita or per square mile, or the percentage of increase per annum, or the cost per ton of moving freight one mile. The statistics need not be absolutely complete. The general movement of imports and exports can be discerned even if there should be some inaccuracies in the returns or some undervaluations.

The statistics of distribution, on the contrary, are neither easy to get nor are they easy to express. No government officer registers the amount of capital invested by business men from year to year or the rate of return from it. Rents, profits, and wages are private matters; and there is no means of making men reveal them, even if it is possible (and in many cases it is not) for them to give exact figures. Business varies in so many different degrees as to capital, skill, and risk that, even if we had reliable statistics of profits, it would be difficult to formulate any average that would be anything more than the numerical average of the bare figures. Labor is of such varying degrees of efficiency and trustworthiness, and employed under such different circumstances, that an average of actual wages is of little value. Personal interests and social prejudices also affect, unconsciously perhaps, the persons making, tabulating, or using the returns, so that the statistics furnish material for social polemics rather than social philosophy. In the question of wages especially, statistical science has as yet failed to overcome these prejudices and to command perfect confidence in either its methods or its results.

It is the purpose of this paper to examine the various attempts in the Tenth Census of the United States to get at the wages of labor, and to point out the progressive improvements in method which these attempts show and the next step in this line of progress. This is of especial importance just at this time, when the plans for another census are being formed, and when so many State bureaus of labor are laying down lines of work, which, in order to be of the most value, must be correctly formulated at the beginning, and then prosecuted systematically from year to year.

Before entering upon this examination, it will be well to clear away some erroneous impressions as to what the statistics of wages are intended to show. This will best be done by saying that the statistics of wages are primarily intended, not to determine any question of technical economic distribution, but to determine the question of social distribution. Perhaps no expression in the whole range of economic literature has worked more unfortunate consequences than that of "distribution." It has always seemed to imply that there was a direct division of the product between the producers,—between land-owners, capitalists, and laborers. There is production of wealth by the community, and there is exchange and consumption of wealth by the different members of the community. There is also distribution, which, however, is not direct, but indirect, through the workings of exchange and consumption. The fallacy of the first conception becomes apparent the moment we try to formulate any law of distribution. Some maintain that it is governed entirely by natural law. This, however, is false, as any study of factory legislation or the influence of trade unions and strikes will show. Others think that it can be controlled by legislation. This again is false, as shown by the history of attempts to fix the rate of wages or the prices of commodities or the rate of interest. Distribution is brought about by the working of a great many different causes, some of them natural, some of them social; and no simple analysis can explain all the different cases.

From the point of view of statistics, the old notion of distribution is especially misleading. The statistics of wages can determine no law of distribution in the technical economic sense. The investigation has to do with the question of social distribution; that is, of the well-being of the population. Its chief value is to answer the question of social content or discontent. It proceeds tacitly on the assumption that, as a matter of social expediency and social justice, the mass of the community should have a comfortable subsistence. It takes it for granted that it is a matter of congratulation if in our country the mass of the community have a better subsistence than in other countries, and that it is to be regretted if we find that their well-being is decreasing. The primary object of statistics of wages, therefore, is to determine the ordinary income of that portion of the population represented by the wage receivers, and what that income is worth in procuring a comfortable subsistence. The technical operations involved are the collection of accurate data, and the presentation of them in such a form as to show the condition of the mass of wage receivers as to income and what income will buy. It is not denied that secondary results, such as the variation of wages in different occupations, or the relation of wages to cost of production or to profits, may also be attained; but the main object of the inquiry is social, and must not be sacrificed to these secondary ones. All statistics of wages must keep this primary object in view.

The last census of the United States made several presentations of wages in manufacturing industries and railroads. The crudest was that given in Volume II., page xi. and page xvii. Manufacturers were asked to give the total number of persons employed and the total amount of wages paid during the census year. The results were as follows: —

Total wages paid, ...	$947,953,795
Total number of persons, ...	2,732,595

Dividing the first of these numbers by the second, we have $346.90 as the average wages of persons in all these industries. I cannot find that the census presents this figure anywhere as an average of wages for the United States, but it has been extensively quoted as if it were such. Evidently, however, it can lay claim to no such honor. The data on which it is based were extremely defective. It is said that employers were accustomed to return all the men whose names had been on their payrolls during the year, without regard to the length of time they were employed. Again, in some industries, the men are regularly employed only a portion of the year. In the lumber trade, for instance, men are employed only six months, so that their average was only $245.24. In a number of cases, it was reported that only ten months had been made during the census year, so that the wages paid covered only that period. The data are not only defective, but the average presented is no typical average for the reason that it includes men, women, and children. For instance, the average wages in cotton goods is $245.93, while in foundry and machine-shop products it is $453.93. The difference is due of course to the relative number of men, women, and children employed in the two industries: —

	Men.	Women.	Children.
In cotton goods there are	64,107	91,148	30,217
In foundries there are	140,459	675	4,217

Of course there can be no comparison between two such averages; neither is the average for cotton goods of any value in determining the condition of people in that industry.

When we come to the reports of the special agents in the various industries, we find several attempts at refinement on this method, due evidently to the consciousness that the general average is of no particular value. Thus, the agent for chemical products (vol. ii. p. 991) says, "The average wages for all employees is $401.11; but, counting the wages of women and children as one-half those of men, the average is $420.66." Thus, the agent for railroads (vol. iv. p. 32) distinguishes the general officers and clerks, whose average monthly earnings are $82.42, from the other employees, whose monthly average is $41.15. An additional refinement is attempted in the iron and steel industry (vol. ii. p. 745). The question of sex and age is not a troublesome one, because there are only 66 women and 7,709 boys in a total of 140,978 employees. This number of employees were paid $55,476,785 in wages, which gives an average of $393.51 for each person. This evidently represents predominantly the wages of men, and in so far is a true average. But it represents both skilled and unskilled labor, and so there might be great variations in the wages actually received by individuals. The agent, therefore, attempts to give us some guidance by explaining that "the highest average daily wages of skilled labor were $2.59; of unskilled labor, $1.24." Still further, there are great variations in different localities. "The highest average daily wages of skilled labor were paid in Rhode Island, Colorado, and Wyoming Territory,—$4; the lowest in North Carolina,—$1.25. The highest average daily wages of unskilled labor were paid in Wyoming Territory,—$2; the next highest in Colorado and California,—$1.75; the lowest in North Carolina,—54 cents. It may be remarked of North Carolina that its iron industry in 1880 was wholly confined to the use of the primitive ore bloomary, and that the labor employed was largely that of colored men." The average wages paid in the four grand divisions were as follows: —

Eastern States, skilled, ...	$2.70	unskilled, ...	$1 21
Southern States, "	2.09	"	1.03
Western States, "	2.70	"	1 31
Pacific States and Territories, skilled	3.50	"	1.75

This analysis of the agent on iron and steel products is based on a perfectly correct feeling that an average of widely separate wages of skilled and unskilled labor represents neither the one nor the other, and that the condition of labor in different localities may be so entirely different that an average is again false. This is a great advance on the general average, and will be of value to us when we consider what the next census of the United States can do in getting statistics of wages.

Mr. Joseph D. Weeks, the agent on the manufacture of coke (vol. x.) and also on the manufacture of glass (vol. ii. p. 1044), makes still further refinements on the general average. He says in regard to wages in the glass industry: —

> The total amount of wages paid, $9,144,100, divided by the total number of hands employed, 24,177, would give a quotient of $378. Though such a quotient is often regarded as the average yearly earnings of each employee, a little consideration will make it evident that it does not represent such earnings; that it really represents nothing but the division of one number by another. The only circumstances under which a division of the total amount of wages received in any industry by the total number of men employed in that industry would be a correct statement of the earnings of the persons so employed are when the same number of men were employed during the whole year, and when, if the works were idle during any part of that year, the men were idle also, glass-making being their only occupation. . . . In other words, the only way in which it would be possible to show what were the yearly earnings of each man at the glass works of the United States during the census year would be to ascertain directly from the books what each man received; and for such a statement there are no data. . . .
>
> A somewhat similar difficulty exists in any attempt to arrive at the average wages paid in the different classes of labor employed. This

is a most difficult statement to make under any circumstances in this or any other industry. It is very easy to give an average of the different rates of wages paid; but to get at the real average rates — that is, an average which shall consider not only the several rates, but the number of men employed at each rate, by a consideration of both of which the average rate can only be reached — is more difficult.

The agent then makes a very skilful and careful attempt to present the rate of wages in a table, of which the following is a sample: —

RANGE AND AVERAGE RATES OF DAILY WAGES IN THE MANUFACTURE OF WINDOW-GLASS.

Class.	Number.	Range.	Average.
Managers, ...	23	$1 16 to $6.00	$3.90
Boss blowers, ...	44	2 57 to 12 00	5.47
Blowers, ...	424	2.18 to 12.00	5.30
Gatherers, or tending boys. —			
16 years and upward, . . .	424	1 76 to 6.00	2.72
Under 16 years, ...	34	.30 to .39	.35

The table is then carried out for all the other occupations or classes in the manufacture of window-glass, of green glass, plate-glass, and of glassware. These tables seem to meet all the requirements of the statistical average. Distinctions of sex, of age, and of occupations are all observed. The number of persons in each occupation is given; and the average wages "is obtained by multiplying each rate of wages by the number of persons employed at that rate and dividing the sum of the products so obtained by the number employed, so that the average represents the real average wages of the different classes." The "range" gives us the highest and lowest wages, and enables us to control, to a certain extent, the average. In my opinion, this is the most scientific wage return made by the census, and points clearly the direction which further progress will take and the lines upon which the wage statistics of the Eleventh Census ought to be laid out. Before considering that question, however, we must examine Volume XX. of the Tenth Census, which is entirely devoted to wage statistics.

The method pursued in this special volume is different from any of those we have thus far described. Returns were obtained from a large number of employers of the wages paid different classes of workmen. It was endeavored to have the classification the same in all establishments in the same industry. The returns were carried back sometimes as many as thirty years. Each establishment was printed by itself, with various explanatory remarks in regard to the length of the working day, the intervals of payment, the opportunities for extra earnings, etc. A sample of one of these tables is given below.* They are often of great interest; and, as Superintendent Walker puts it, the volume is a great magazine of facts. No attempt is made to give average wages; and, in fact, any such attempt is expressly disclaimed. Only, at the end, a table is given of the wages of engineers, machinists, common laborers, painters, and carpenters,—occupations which appear very frequently in the different schedules. But this, again, is a mere enumeration; and no average is cast. It is impossible from this volume to say anything about the income of the men in the manufacturing industries of the United States. From the point of view adopted in this article,—namely, that the chief interest of wage statistics is social,—the volume is a failure.

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*DIAMOND GLASS COMPANY, RAVENNA, OHIO.

Classes of Employees.	Unit of payment.	Dates.										
		1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870
Boss blower, .	Day	$5 48	$4 23	$4 67	$5 00	$6 10	$5.35	$4 65	$5.10	$7 40	$7 40	$7.40
Blower, . . .	"	5 48	4 23	4 76	5 00	5 10	5 35	4 65	5 10	7 40	7 40	7 40
Tending boy, .	"	3 16	2 50	2 80	3 03	3 33	3 45	4 00	5 00	5 00	5 00	5.00
Master teaser, .	"	3 33	3.33	3 33	3 33	3 33	3 33	4.00	4 00	4 00	4 00	4 00
Helper, . . .	"	1.83	1.66	2 15	2.15	2 05	2.05	2.15	2 90	2 90	2.90	2.90
Teaser, . . .	"	1.66	1 50	2.05	2.05	2 05	2.05	2.15	2 15	3.00	3.00	3.00
Lime-sifter. . .	"	1 66	1.50	2.05	2 05	2.05	2.05	2.15	2.00	2.50	2.50	2.50

It remains now to point out what system should be adopted, in order to carry these statistics further and to make them of real value as a picture of the social condition of the country. If we gather together the hints and suggestions which this survey of the efforts of the Tenth Census to get wage statistics has afforded, we shall be able to lay down some pretty obvious rules for the guidance of the Eleventh Census in its efforts towards the same end. These suggestions are as follows: —

(1) The effort to get wage statistics should confine itself to the large industries, where the wages system is fully established, and where large bodies of men are engaged in labor under the same conditions. It was a perfectly correct feeling which led the census, in its twentieth volume, to confine itself to large establishments. It was an excellent confirmation of this principle that the most successful statistics were those from highly concentrated and organized industries, like the glass, and the iron and steel industries. It is only in these large establishments that the labor is of anything like a uniform quality, that wages represent a definite payment for specific services rendered, and are, as a rule, the full earnings of the laborer. Wages become here a real commercial transaction, uninfluenced by personal feeling or special relations. They become capable of statistical aggregation, classification, and measurement. It is impossible to collect the wages of all laborers. They work under such different conditions, with such different side advantages or disadvantages, under so many vicissitudes of fortune, that the purely accidental or exceptional destroys the regular and the permanent, which it is the object of statistics to disclose. The men who gain only part of their subsistence by wages, the men with intermittent employment, the infirm and feeble whose services are not of full value, the tramps and vagabonds who call themselves laborers but who live off the community,— to include such cases would

vitiate any statistics of labor. It would be like including in statistics of prices not only the wholesale prices in open market, but all the petty transactions of retail trade, forced sales, and country barter.

(2) Wage statistics can best be obtained from employers. The census was again right in seeking its statistics from this source. They alone keep the necessary figures and records from year to year. They are less likely to be influenced by personal feeling or class prejudice to make false or misleading statements. Their returns are much more easily controlled than those of individual workmen. It would be a difficult thing for an employer to increase the wage-list of all his employees in his census schedule, without being detected by the experts of the Census Office or by other men in the same line of business. Large bodies of workingmen might, on the other hand, be influenced by a common class feeling to make their wages as low as possible, in order to make a showing on their side of the social question; and it would be almost impossible to control such figures, unless they were manifestly absurd. We have here a tendency which threatens to wreck the whole system of social statistics; namely, that the knowledge of the use that will be made of the results of the investigation will prejudice in advance the original returns. We can avoid this only by seeking our data in absolute records compiled for other purposes, whose use will not prejudice the persons furnishing them. Such records are the pay-rolls of large establishments, keeping the name of the establishment secret. The United States Census has some peculiar advantages in this respect. The country is so large that it can get its statistics from numerous establishments, and effectually conceal their locality. By aggregating the workmen in the same occupations, it can still more effectually conceal the identity of its informants, when they so desire. No difficulty has ever been experienced in persuading employers to furnish

desired facts, when they have once been convinced that no unwarranted use would be made of these facts to prejudice their business. Of course, a great deal depends upon the head of the Census Office himself; and for this reason it is particularly unfortunate that there is not a permanent statistical organization instead of the decennial census.

(3) Wages must be carefully distinguished as to industries, occupations, and the sex and age of the persons employed. This has been done in the returns of the Tenth Census. It is absolutely necessary to distinguish industries, because some require a select body of men or particular skill, and it would be a mistake to confuse these with those requiring less strength or less skill. Classification by industries also enables the census to furnish particular information — which is often of value, especially when extended over several years — as to the condition of these industries. The classification by particular occupations in the industry is scarcely less important; for it enables us to separate the skilled from the unskilled, and to determine the wages of each. Extended over a series of years, such detailed statistics by occupations would give us most valuable information in regard to the changes taking place in the chief industries by the introduction of machinery and the substitution of unskilled for skilled labor. It is directly in such careful detailed work that statistics are often of the most value. The distinctions of sex and age must also be observed. The wages of men, women, and children are entirely different quantities, and are as incapable of addition and averaging as a bushel of potatoes and a pound of butter. It is to be hoped that this folly, condemned by all statistical bureaus in the world, will be rigidly excluded from the Eleventh Census, and that the passion for casting averages, even when the quantities cannot be averaged, will be restrained. In the Tenth Census, it was the special agents — men trained in natural rather than in social science — who were the chief

sinners in this respect. They could not resist the temptation to divide one number by another, even while saying in the next sentence that the result of the division was of no value. On the other hand, the careful separation of the wages of men, women, and children gives us valuable information of the social condition of the working classes. It enables us to determine whether the wages of the man are sufficient to support the family, or whether they must be supplemented by those of wife and child. It enables us to determine, in some cases, how far the labor of women and children is supplanting that of men, owing to the introduction of labor-saving machinery. Extended over a series of years, it would give us the most valuable information as to the progress of industry,—information which really can be obtained by no other method of observation. It is to be hoped that the next census of the United States will distinguish, also, between the married and the unmarried women, which would make the information of still greater sociological value.

(4) The employers must be asked to give the actual wages paid, and not mere estimates of the *rate* of wages. They must also be asked to give the actual number of men receiving these wages. The tables in the glass industry are examples of what is desired, only there one step further should have been taken, and the number of men receiving a definite wage should have been given instead of the number receiving average wages. The average wages can be easily calculated afterwards. The advantage of the actual wage is that we get a definite fact, and not an estimate by a person who may be more or less well informed or more or less honest. It is, of course, true that the actual wages may be returned falsely; but the census is at least asking for a definite thing and not an opinion, and can control the former more easily than it can the latter. The Tenth Census did not fully comply with this last condition, although there are indications

that it had it half unconsciously in mind, and strove in some cases to carry it out. The Eleventh Census should start on this basis,—that all wage statistics should be of actual wages and for a given number of men,—and should accept no other. In all further operations and deductions, the original basis will at least be certain and the validity of the premises unquestioned.

(5) A further division of the work of presenting the statistics of wages is suggested by the returns of the agent for the iron and steel industry noticed above. It appears, namely, that wages are very different in different parts of the country for one and the same industry. The conditions of life in the Southern States, for instance, differ so widely from those obtaining in the Pacific States that the wages of skilled labor in the former are but little above those of unskilled in the latter. This makes it expedient that the statistics should be grouped primarily by districts where the conditions are nearly the same rather than consolidated for the whole country. Such grouping will have its compensating advantages, as all careful statistical grouping has, in the facility it will afford for the special study of conditions in different parts of the country and in the history of local development. The Eastern States are now an industrial community with all the characteristics that accompany that stage; the Western States are still partly agricultural, and the amount of unoccupied land affords a relief to overcrowding in employments; the Pacific States have a scarcity of labor compared with their resources; while the Southern States have the peculiarity of negro labor. These are differences which justify and demand separate consideration at the hands of an intelligent census office.

All of these demands can be met by a census office only by complying with one further demand; namely, that it shall in these investigations have the services of experts. There is no notion more foolish than that a statistical investigation is a sort of mill into which all sorts of material may be cast, and ground up into percentages and averages which will have a virtue that the original figures had not. You might as well throw sawdust into a flouring-mill and expect to get flour out of it. The virtue of statistical tables lies in the correctness of the original data. What sort of statistics of imports should we have if we allowed importers to fix their own valuations without let or hindrance? The original returns in statistics of wages must be subjected to the closest scrutiny when they first come in. Those which are absurd or false on the face must be rejected; and those which are unusual or difficult to be explained must be elucidated by correspondence with the parties making them, who will perhaps be able to show why their returns differ from those common in the same industry and the same section of country. These explanations must be incorporated in the published returns in the form of notes to the tables, for the guidance of those making use of the statistics. Every bureau of statistics is obliged to do a vast amount of labor of this sort. It can only be done satisfactorily by men who are familiar both with the industries and with statistical methods. The census will never be able to secure such experts until we have a permanent office where men can be trained for it. Our decennial census suffers more from this than from any other cause,— that it is obliged to start every time with an untrained body of officers, who are scattered again at the end of the work, just when their services are becoming of the most value. We shall never have satisfactory statistics in this country until we have at Washington a permanent statistical bureau, which shall have its trained body of experts, able to undertake from time to time any investigation that is demanded, and which shall have the management of the census.

If the next census of the United States is able to employ a body of experts, who will collect information about wages in the great industries on the lines laid down above, we shall then obtain a mass of wage statistics of very great value, and such as neither our country nor any other up to this time possesses. With the general intelligence of American employers and the force of public opinion, which would readily appreciate the value of such an undertaking when it was once explained, I believe that this could be done. Such a mass of facts would be of great value, both in detail and as a whole; and most interesting conclusions could be reached as to the prosperity of different parts of the country. As the years went on and such a record was continued on the same lines, a really trustworthy picture of the progress of our civilization could be drawn. The sooner we adopt some scientific method, the sooner such a record can be begun, and the sooner shall we be able to avail ourselves of its teachings.

But, even after we have collected such a body of scientific wage statistics, one more operation is necessary before they will answer the question of the income of the working classes. No average wage and no combination of averages can show us the condition of the working classes, because an average may be made up of so widely divergent extremes. This condition can be shown only by means of proportions; that is, by showing how many of the men receive a certain income, how many receive less, how many more, and so on. It is impossible to give illustrations of this from the Tenth Census, because we do not have the number of workmen specified. We cannot therefore give the proportions of actual wages received. We can, however, give the proportions in some cases of the different rates of wages received. This brings us to a series of statistical calculations of the following sort:—

Table 1 classifies the returns of the rates of wages in four occupations as they are given in the census (Volume XX. for common laborers, carpenters, and engineers, Volume II. for the workmen in glass works). The scale of wages is based on those most commonly paid, as $1, $1.25, and so on, other wages being placed in the nearest class, so that a wage of $1.20, for instance, is classed with $1.25. The scale is in no sense, therefore, an average of the different wages; but by far the larger number fall together with the numbers in the scale: —

TABLE I.

PERCENTAGE OF WAGE RETURNS AT DIFFERENT RATES OF WAGES IN FOUR OCCUPATIONS.

Daily Wages.	Common Labor'rs	Carpenters	Engineers.	Glassmen.	Daily Wages.
$0.50	1.4				**$0.50**
.75	5.0				**.75**
1.00	21 6	.6	1 1	8.5	**1.00**
1.25	44 7	2 5	3 4	13 7	**1.25**
1.50	20.1	12.7	9.5	4.2	**1.50**
1.75	4 4	24.2	15.3	12.2	**1.75**
2.00	2.0	28.7	18.3	11.8	**2.00**
2.25	.8	15.3	13.8	4.6	**2.25**
2.50		10.8	13.5	1 9	**2.50**
2.75		1.9	5.4	5.0	**2.75**
3.00		3.3	10.3	1.7	**3.00**
3.25			1.1	2.7	**3.25**
3.50			1 4	22.0	**3.50**
3.75			2.0	1.2	**3.75**
4.00			3.2	5.3	**4.00**
4.25			.7	.2	**4.25**
4.50			1.0		**4.50**
4.75				.2	**4.75**
5.00				4 3	**5.00**
5.25					**5.25**
5.50				.5	**5.50**
	100.	100.	100.	100	

The object of this table is to show at a glance about what are the rates of wages paid to workmen in various occupations. We see, for instance, that the prevailing rate of wages for common laborers is $1.25, although considerable numbers receive only $1; and, in another considerable number of cases, $1.50 is reported. If we turn to carpenters, we see that they are paid at higher rates, their rates really beginning where those of the laborers leave off. Engineers again are paid much higher than common laborers; and their wages range higher than those for carpenters, as is shown by the larger number of cases where $2.50 and over is paid. The greater range of wages shows that the engineers are not so homogeneous a body as the carpenters or the laborers. There are greater differences of skill among them. The column for workmen in the glass industry differs from the others in two respects. It is based on the actual number of men employed at different rates of wages, and hence is a truer representation of wages actually received; but it is not wholly true, because the original returns are not used, but only the averages in each occupation. Managers and clerks and boys are excluded, in order to get at the wages of real workingmen of adult age. Again, the workmen in the glass industry are not a homogeneous class like common laborers or carpenters, but include men of varying degrees of skill. This explains the wide range of wages from $1 up to $5.50. At the bottom stand the unskilled laborers, over twenty-two per cent. of the whole, receiving only $1 or $1.25 a day. Then there is a body of skilled men, twenty-four per cent. of the whole, receiving $1.75 and $2 a day. Then there is a very considerable number of skilled workmen, twenty-two per cent., receiving as high as $3.50 a day, and a few, nearly five per cent., who receive very high wages, $5 or more.

It must be clearly understood that this and the following table do not possess in themselves any validity. They are given merely as examples or illustrations of what might be done with wage statistics. In order to have any validity, they should have been based on actual returns of the number of workmen and their actual wages. If the next census will give us such figures, they can be analyzed in this double direction. Men of a common occupation may be taken in all industries, as common laborers, and be classified so as to show the proportionate number receiving each rate of wages; or the men in a single industry may be taken, as above in the glass industry, and their distribution shown. With the original

TABLE II.

CLASSIFICATION OF WAGE RETURNS SHOWING NUMBER AT OR ABOVE EACH RATE (on basis of 1,000).

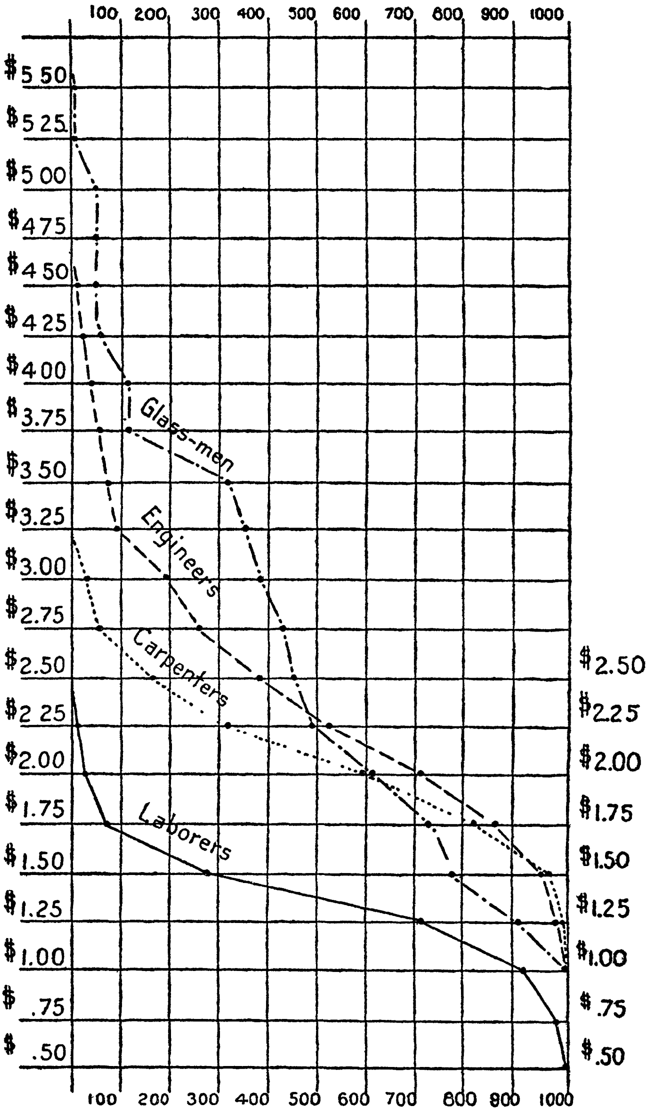
Daily Wages.	Common Labor'rs.	Carpenters.	Engineers.	Glass-men.	Daily Wages.
$5.50 or over				5	**$5.50** or over
5.25 “ “				5	**5.25** “ “
5.00 “ “				48	**5.00** “ “
4.75 “ “				50	**4.75** “ “
4.50 “ “			10	50	**4.50** “ “
4.25 “ “			17	52	**4.25** “ “
4.00 “ “			49	105	**4.00** “ “
3.75 “ “			69	117	**3.75** “ “
3.50 “ “			83	337	**3.50** “ “
3.25 “ “			94	364	**3.25** “ “
3.00 “ “		33	197	381	**3.00** “ “
2.75 “ “		52	251	431	**2.75** “ “
2.50 “ “		160	386	450	**2.50** “ “
2.25 “ “	8	313	524	496	**2.25** “ “
2.00 “ “	28	600	707	614	**2.00** “ “
1.75 “ “	72	842	860	736	**1.75** “ “
1.50 “ “	273	969	955	778	**1.50** “ “
1.25 “ “	720	994	989	915	**1.25** “ “
1.00 “ “	936	1,000	1,000	1,000	**1.00** “ “
.75 “ “	986				**.75** “ “
.50 “ “	1,000				**.50** “ “

returns on the right basis, any combination desired may be made.

One more operation brings us to our goal; namely, to show the income of wage receivers. Table 2 is constructed by adding to the wage returns at each rate all the wage returns of rates above that. For instance, among common laborers, 8 returns showed a wage of $2.25; 28 showed a wage of at least $2; 72, of at least $1.75; 273, of at least $1.50; 720, of at least $1.25, and so on. The same remark is to be made as above; namely, that this particular table has no validity, because it is based on rates of wages instead of actual wages.

The object of this table is to show what the minimum income of great bodies of workmen is. In Table 1, it appeared that common laborers received $1.25 a day, some of them more and some of them less. In this table, it appears that in 720 cases out of 1,000 they receive at least that. In treating the question of income in connection with the cost of subsistence or the standard of living, the real point is the minimum income of large numbers of persons. It might be shown, for instance, that the average wages of laborers was $1.50, and that at $1.50 a day persons could live comfortably; but that would prove nothing so long as a large number of workmen did not get that wage. The abundance enjoyed by the workmen above the average does not fill the stomachs of those below. The table offers also interesting comparisons of the well-being of masses of workmen in different occupations. At the point where the common laborer reaches his maximum, $2.25, there are still 313 carpenters, 524 engineers, and 496 glass workmen out of 1,000 enjoying that or a higher rate of wages. At the point where carpenters reach their maximum, $3, there are still 197 engineers and 381 glass workmen out of 1,000 enjoying that or a higher wage.

The following diagram shows the same thing graphically, and explains itself: —


100
200
300
400
500
600
700
800
900
1000
$5 50
$5 25
$5 00
$4 75
$4 50
$4 25
$4 00
$3.75
$3 50
$3.25
$3.00
$2.75
$2.50
$2 25
$2.00
$1.75
$1.50
$1.25
$1.00
$ .75
$ .50
$2.50
$2.25
$2.00
$1.75
$1.50
$1.25
$1.00
$ .75
$.50
Glass-men
Engineers
Carpenters
Laborers

This is a sample of a sort of diagram that it might be interesting to carry out in different directions in the next census. One perceives at once the inferior position of the common laborers, and sees, when you are speaking of a $1.50 wage, for instance, exactly how many enjoy it. One sees the relative position of carpenters and engineers; that the latter start in some cases with about the same wages as the former, but gradually draw away from them until in the upper wage classes they are in every case more heavily represented. Finally, the peculiar line representing the glass-men shows what we may expect when we take all the workmen in any large industry without regard to their skill. The lower part of the line is inferior to both the carpenters and the engineers, while the upper part is greatly superior. We have, for instance, the apparent contradiction that a smaller number of glass-men receive at least $1.50 than of carpenters; while a much larger number receive $2.50 or over. This suggests the remark that in a real census it would not be advisable to compare men in a homogeneous occupation like the carpenters with men in a diversified industry like the glass-men. It would be allowable to compare men in different occupations, whether skilled or unskilled, with each other, as, for instance, brakemen on a railroad and telegraph operators; and, on the other hand, to compare men in different industries with each other, as men in the iron and steel industry and those in the glass industry.

Finally, there is one more manipulation which it would be foolish to attempt, even by way of illustration, on the insufficient data of the Tenth Census. If the four industries or occupations we have thus far used for the purpose of illustration were all the occupations of the country, and if the returns were of the real number of workmen with their actual wages, then a combination of all these in one table would give us the incomes of workmen in the United States. We could then say that such a proportion of workmen receive at least such and such an income. It would be misleading to attempt such a combination except on the basis of full and exact returns which have been subjected to the most careful and rigorous scrutiny. It is very probable that the next census, with the most conscientious and strenuous effort, may not be able to approximate such a result. It is probable that it will be much more successful in some highly organized industries like cotton mills than in others like carriage factories. But the method has this great advantage: that, just so far as it gets complete returns from any one industry, these are of value in themselves without regard to the final grand combination. If we should have complete returns from all iron works or all textile industries or all railroad employees, they would be of immense value as indicative of the incomes of work-people in this country, even if the returns from car works or tobacco factories should on examination prove to be worthless. As was said before, accuracy and limitation are as valuable in statistical work as comprehensiveness and apparent exhaustiveness.

In conclusion, I desire to point out very briefly the way in which wage statistics collected by the next census on the plan here advocated could be used. It is premised that they shall be the actual wages of a known number of men, shall be distinguished by industries or occupations and by section of country, shall be collected or at least scrutinized by experts, and shall be subjected to the manipulations shown in Tables 1 and 2.

The value of wage statistics lies in four directions: —

(*a*) In determining the incomes of the laboring class.

(*b*) In comparing wages in different countries or in different parts of the same country.

(*c*) In comparing present wages with past wages.

(*d*) In the possibility of co-ordinating wages with the cost of living in all the above cases, so as to show the actual well-being of the working classes.

A mass of wage statistics collected by the above method would enable us to do all these things.

(*a*) We could display the income of the working classes in the most important particular; that is, the proportion of men enjoying a certain income or above. We could do this for the whole body of workingmen or we could do it for the men in any one industry. We could do it for masses of unskilled workmen, say the common laborers, in all industries, and thus determine the actual income of what would probably be the lowest stratum of the working classes. We could do it for classes of skilled workmen, such as glass-blowers or cotton-spinners or for workmen in a protected industry like the iron industry. The variety of practical questions that could be answered in this way is enormous.

(*b*) Such wage statistics would enable us to compare the whole mass of workingmen in one country with the whole mass of workingmen in another country, and get some idea of the wages of each. It would enable us to compare the incomes of men in any one industry in one country with the incomes of men in the same industry in another country. All such attempts at the present time shatter on the differences in the methods of carrying on the industry in any two countries. In one country, for instance, much more machinery is used than in a second; and any comparison by an average wage is vitiated by the fact that more unskilled labor is employed by the first than by the second. With proportionate wage incomes, such variations make no difference, or rather they reveal themselves at once in the lower range of wages in the first case, showing that cost of labor is lower on account of the more extensive employment of unskilled workmen. Statisticians have wasted their efforts for many years in fruitless attempts to classify the men in the same industry in different countries, so that the classes would exactly cover each other. They will never be able to do this, because the differences in technique are so great. We shall never reach a comparison of wages on that basis; and it is better to abandon the attempt at once, and take up that which is practicable, and which will at the same time accomplish the object aimed at,— namely, to show the condition of the men in that industry and the cost of labor. Our own census could in the same way show us the relative condition of all workmen or of workmen in the same industry in different parts of our own country,— as, for instance, in the North and in the South, in the East and on the Pacific Coast.

(*c*) Almost the same remarks might be made in reference to comparing present wages with past, which lies at the bottom of all attempts to determine the progress of the working classes. Such attempts shatter again on the changes in technique and the improvements in methods of production. A cotton-spinner now is not like the cotton-spinner of fifty years ago. The terms do not mean the same thing. So that, when we say that cotton-spinners receive greater or less wages than they did fifty years ago, we are really comparing incommensurable terms. These difficulties can never be fully overcome. No mere wage statistics can determine the relative well-being of the working classes at two different times. But proportionate wage incomes, collected on the same system at successive intervals, would give us valuable data for such determinations.

(*d*) Again, it is everywhere recognized that mere money wages do not determine the well-being of the working classes; that they must be brought into connection with the cost of living. No average wage can do this; for, although the average may allow of a very comfortable subsistence, there are, of course, many men below the average. Proportionate wage statistics would enable us to do this. Suppose, for instance, it appeared from careful investigation that, at current retail prices, $400 would support a laboring man and his family in great comfort, our statistics would give us an indication of the number of cases in which workingmen would probably be able to attain that amount.

Finally, it is not denied that there are many difficulties in deducing actual income from wages, as, for instance, in irregularity of employment, in different methods of payment, in opportunities for extra remuneration, in special privileges, as house rents, free libraries, etc., which some employers afford their workmen. These can be treated only by statistical experts, which is only repeating what has been said before: that statistical results depend as much upon the skill and judgment of the statistician as upon the figures themselves. You cannot have scientific statistical results unless you employ scientifically trained statisticians.

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